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B6F FCNK

(56) Documents Cited

GB 2313904 A

EP 0887586 A2

WO 2001/002937 A1

JP 070025415 U

US 6161944 A

US 5815225 A

US 5036436 A

US 4760277 A

US 4626965 A

(58) Field of Search

UK CL (Edition S) B6F FCNK

INT CL⁷ F21V 33/00, G06F 1/16

Online:EPODOC,PAJ,WPI

(54) Abstract Title

Keyboard illumination device releasably attached to an upper edge of a laptop computer

(57) A device 1 for illuminating at least a part of a computer (e.g. a data input keyboard 5) comprises an illuminating means 2, a shield 9 (Fig.2) for guiding light emitted by the illuminating means toward the keyboard, and a releasable support means 6 (e.g. a hook or telescopic arms or Velcro (RTM)) to enable the device to be attached in position on an upper edge of a laptop computer. In use, when the device is supported by a computer, the keyboard can be illuminated without obscuring a user's view of the visual display means. The guide 9 shields the visual display means from light emitted by the illuminating means.

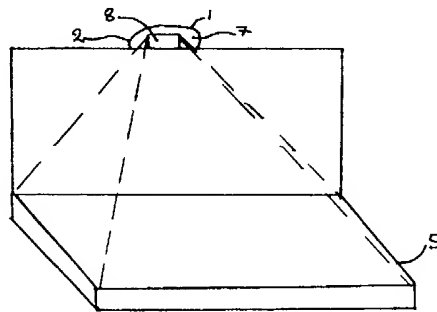


Fig. 1

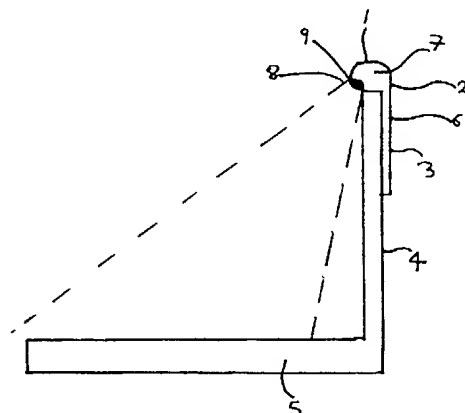


Fig. 2

1/3

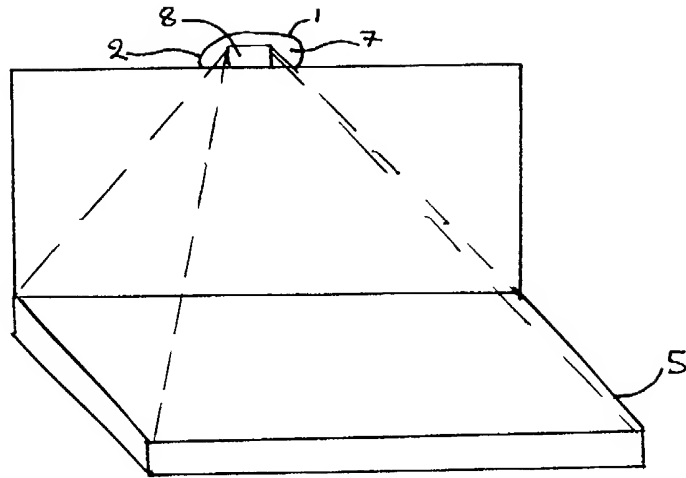


Fig. 1

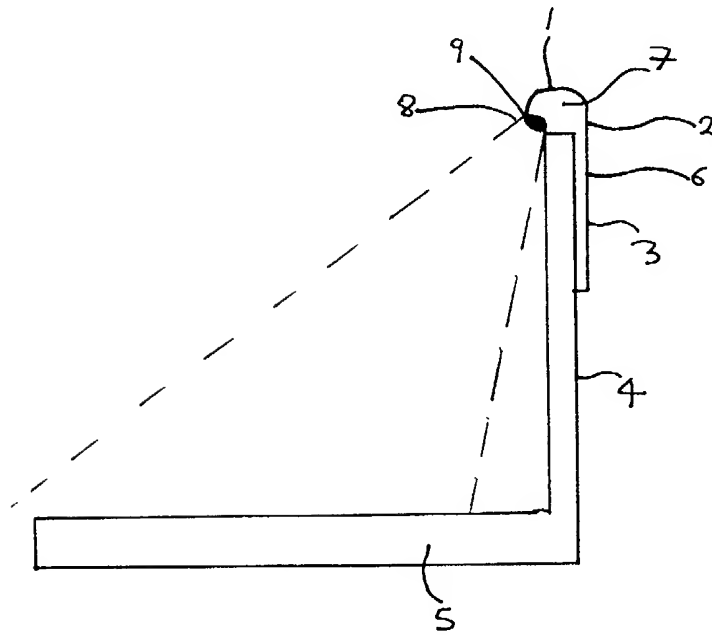


Fig. 2

2/3.

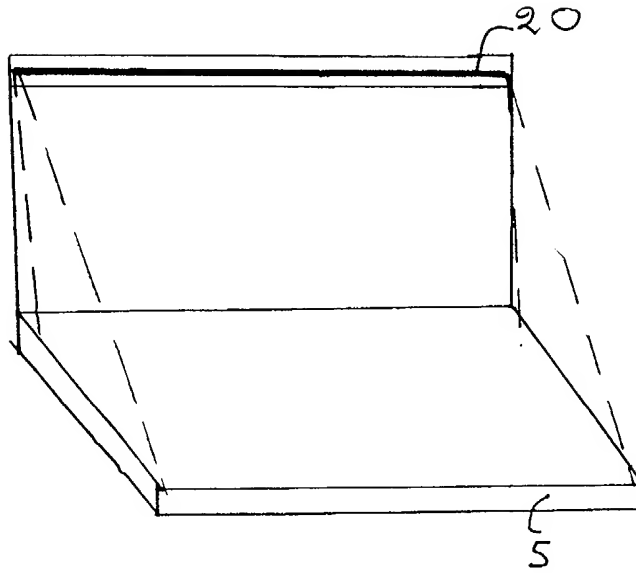


Fig 3

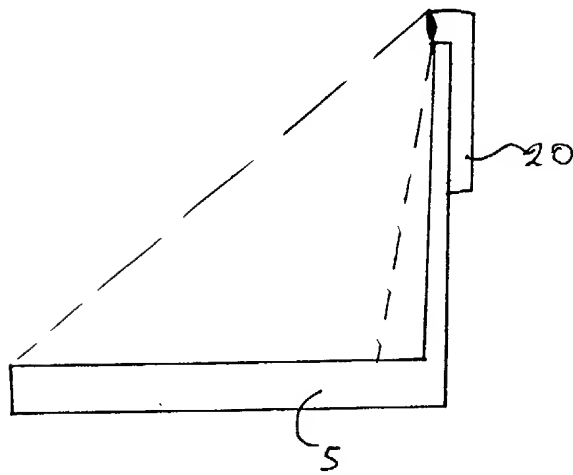
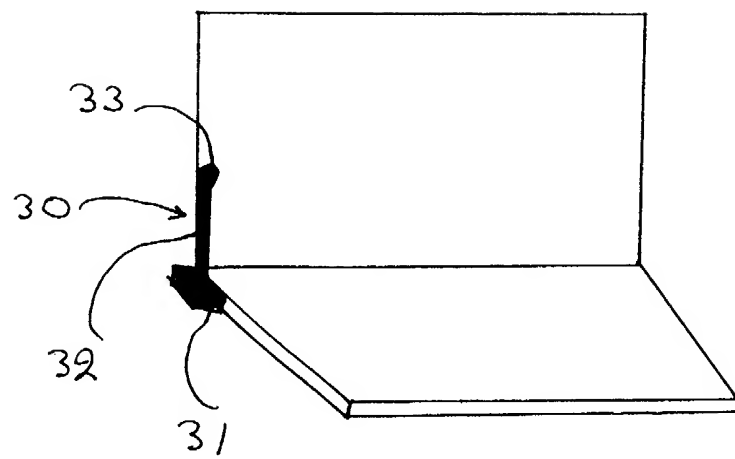


Fig 4.

3/3.

Fig 5



A DEVICE FOR ILLUMINATING PART OF A COMPUTER

FIELD OF THE INVENTION

5 The present invention relates to a device for illuminating a part of a computer, to a computer provided with such a device and to a computer provided with means for supporting such a device in position. Many forms of computing apparatus have been developed to date. The present invention relates more particularly, but not exclusively, to notebook or laptop computers, and "palmtops" or handheld personal
10 electronic organisers and such like.

BACKGROUND TO THE INVENTION

15 Traditionally, computers are provided with a "QWERTY" keyboard for inputting data. "QWERTY" refers to the layout of alphabetical characters on the keyboard. Whilst there are many accomplished "touch-typists" throughout the world who can use the QWERTY keyboard without having to look at the keyboard, there remains a large number of people who must make continual reference to the keyboard in order to input data into their computer. Other layouts of keyboard are
20 known and accordingly the present invention is applicable to any data input means for a computer, the layout of the characters being irrelevant for present purposes.

 Whilst the keyboard is normally well lit, for example in an office, there are many situations in which the surrounding environment does not illuminate the
25 keyboard sufficiently for a user to see the characters on the keys. Such situations maybe when working on a darkened plane, working in a room where others wish the lights to be lowered or off, and where engineers and scientists are working in the field, for example underground, or in an environment where background illumination must be kept low, for example astronomy. Also, palmtops are often used in low light
30 level environments, for example pubs, restaurants and stations. The problem can be minimised by the colours on display on the screen of the computer. For example, bright colours and white help to illuminate the keyboard, particularly on notebooks where the keyboard is adjacent the screen. However, using bright colours on a screen in a poor background light can cause eye strain and reduce the amount of time the
35 computer can be used in comfort. In order to overcome this on notebooks a user can

change the screen to darker colours, which of course reduces the degree to which the keyboard is illuminated. Such options are not normally available in palmtops which typically have limited adjustability of screen brightness and, in any event, have very low brightness screens because of their small size and limited power availability.

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One device that addresses the illumination problem is disclosed in US-A-5 379 201 and comprises a battery pack and a light assembly that is engageable with mounting clips on the battery pack so that the device may be placed over the upper edge of a screen of a notebook computer. In this position the light assembly extends out perpendicularly from the screen and the battery pack lies flat with the back of the screen. The light assembly directs light downwardly to illuminate the keyboard. There are at least three disadvantages associated with this device. Firstly, the user must assemble and dismantle the device prior to use and after use. Secondly, light emitted by the bulb of the device impinges onto the screen of the laptop. Thirdly, the nature of use of "lap"top computers means that the user very often looks down toward the screen from an angle. The device of US-A-5 379 201 obscures a user's view of the screen making it unsatisfactory to use in many situations.

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SUMMARY OF THE PRESENT INVENTION

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One aim of at least preferred embodiments of the present invention is to provide a device that can be used with computers to alleviate at least one of the aforementioned difficulties.

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According to the present invention there is provided a device for illuminating at least a part of a computer comprising a data input means and visual display means, which device comprises illuminating means, guide means for guiding light emitted by said illuminating means toward said data input means and releasable support means to enable the device to be supported in position on a part of a computer, the device being such that when supported by a computer the data input means can be illuminated without obscuring a user's view of the visual display means and said guide means shields the visual display means from light emitted by the illuminating means. The device can readily be used with existing computers, particularly notebooks, without any need for special modifications to the computer. The guide means inhibits the device from deteriorating the quality of the image on the screen.

Preferably, said guide means shields a user's eyes from light emitted by said illuminating means. This is a considerable advantage as the user is not subjected to glare from the illuminating means.

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In one embodiment, the device further comprises a body, one end provided with said illuminating means, the other end provided with said releasable support means, and the body moveable relative to said releasable support means and/or the illuminating means moveable relative to the body to adjust the position of the illuminating means with respect to the data input means.

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In another embodiment, said releasable support means comprises a body provided with means for engaging the computer. In one embodiment, said means for engaging comprises a hook or arm adapted to engage the upper edge of the screen of a notebook computer in an open position. In another embodiment the means for engaging comprises a plurality of hooks or arms.

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Advantageously, the position of the body with respect to the computer is adjustable to vary the position of the illuminating means with respect to the data input means. This enables one device to be adjustable to cope with varying sizes and styles of computer.

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Preferably, the body comprises a first member and a second member, the first member being attachable to a computer, the second member being supported by and movable with respect to the first member to facilitate said adjustment.

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Advantageously, the body comprises two or more members that are arranged telescopically with one another to facilitate said adjustment.

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Preferably, the illuminating means are movable with respect to the body to provide a further degree of adjustment.

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Advantageously, the body comprises means for accommodating a power source for powering the illuminating means. In this manner the device is completely cable-free and can be used anywhere. Further, the device does not require any power

to be supplied from the computer which is important in portable applications where battery power is limited.

5 Preferably, said illuminating means is an LED. LEDs are preferred for their high intensity light output, low weight and low power consumption.

Advantageously, said illuminating means is a plurality of LEDs. The combination of more than one LED provides a better illumination of the keyboard. In another embodiment the intensity of the light emitted by the LED or LEDs is
10 adjustable by the user to accommodate environments where more or less illumination may be required for the keyboard.

According to another aspect of the present invention, there is provided a computer comprising means for supporting in position a device or part of a device in
15 accordance with the present invention. Thus, in one embodiment separate means are not required to be fixed to the computer to hold the device in position.

According to another aspect of the present invention there is provided computing means comprising a data input means associated with a visual display
20 means, and integral with the computing means a device or part of a device in accordance with the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the present invention reference will now be made, by way of example, to the accompanying drawings in which:

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Figs. 1 and 2 are a perspective view and side view of a first embodiment of device in accordance with the present invention in use with a laptop computer;

10 Figs. 3 and 4 are a perspective view and side view of a second embodiment of device in accordance with the present invention in use with a laptop computer; and

Fig. 5 is a perspective view of a third embodiment of a device in accordance with the present invention in use with a laptop computer.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to Figures 1 and 2 a first embodiment of a device generally identified by reference numeral 1 comprises a head 2 mounted at one end of a body 3. The body 3 comprises an oblong plastic strip (not shown) which is fixed (for example by adhesive) to the upper surface of a casing 4 of a laptop 5, as best illustrated in Fig. 2, and also comprises a housing 6. The oblong plastic strip and housing 6 form attachment means for releaseably attaching the device 1 to the laptop 5. The oblong plastic strip is provided with two rails (not shown) co-operable by friction fit with two grooves (not shown) on the housing 6 so that the housing 6 can be supported on the laptop 5 as shown. The rails are provided with a series of recesses that are co-operable with a corresponding series of projections from the grooves which permits vertical adjustment of the position of the housing 6 with respect to the laptop 5. This arrangement also permits the housing 6 and head 2 to be removable from the laptop 5 when not desired. The body 3 is provided with a recess (not shown) for accommodating a power source, and is also provided with an "on/off" button (not shown) for activating/de-activating the device 1.

35 The head 2 comprises a ellipsoidal solid body 7 provided at the forward face with an oblong aperture 8. The head 2 is mounted for rotation in a vertical plane with respect to the housing 6 so that the oblong aperture 8 can be moved in an upward and

downward sense to adjust the position of the head 2 with respect to the keyboard. Mounted inside the head 2 is an LED array (not shown) which is powered by the power source accommodated by the housing 6 as described above. The aperture 8 is framed by a shield 9, the function of which is three-fold. Firstly the shield 9 confines light emitted by the LED array to an area substantially the size of the keyboard. Secondly, the shield inhibits light from the LED array from impinging onto the screen of the laptop 5 which would otherwise deteriorate the image observed by a user. Thirdly, the shield inhibits light emitted by the LED array from impinging on a user's eyes which would otherwise be an irritation and make usage of the laptop 5 uncomfortable. It will be noted that, in position on the laptop 5 the device 1 does not obscure a user's view of the screen, but at the same time facilitates use of the keyboard in a dark or dim environment. The pattern of light emitted from the head 2 is shown schematically in Figs 1 and 2. The position at which the pattern of light falls onto the keyboard can be adjusted by rotating the head 2 as described above.

Referring to Figures 3 and 4 a second embodiment of a device generally identified by reference numeral 20 is similar to the device 1. The difference between the two devices is that device 20 is elongated so that it spans the full width of the screen of laptop computer 5. Otherwise the construction of the two devices is virtually the same.

Referring to Figure 5 a third embodiment of a device is generally identified by reference numeral 30 and comprises a clip 31 upon which a stalk 32 is mounted. The clip 31 comprises two finger-operated arms (not shown) which are biased by a torsion spring (not shown) to a closed position. The stalk 32 is mounted on the clip 31 via a ball-and-socket joint which permits adjustability of the stalk 32 relative to the clip 31. The stalk 32 also has means for accommodating a power source. A head 33, similar to the head 2, is rotatably mounted on the other end of the stalk 32 so that it can move in two mutually perpendicular planes (not shown), the axis of the stalk lying in one of the planes.

In use, a user can clip the device 30 to a laptop computer as shown and, using the stalk 32 and head 33, move the device 30 so the light emitted from the array of LEDs in the head 33 is cast across the keyboard of the laptop.

Various modifications to the embodiments described above are envisaged. For example, an important variation is that the body may be formed from one piece and be provided with a hook means, for example two arms, by which the weight of the device can be supported via the upper edge of the laptop screen. This mitigates
5 the need for a separate member to be attached to the computer before the device can be supported in position, and allows quick emplacement and removal of the device. The body may be constructed from two or more members that are arranged telescopically with one another to provide the necessary adjustment. In this embodiment, the user would simply emplace and remove the device from the laptop
10 screen as desired. Alternatively, the device may be attached to the casing of the laptop by VELCRO^(R) (TM).

Alternatively, the attachments means i.e. rails described in conjunction with Figures 1 and 2 may be provided integrally with the laptop casing. This mitigates the
15 need to attach a separate member to the laptop casing before the device can be supported in position.

In another embodiment, the device is integral with the laptop itself and can be switched on and off under control of the laptop. Such a device might have the various
20 degrees of adjustability described above.

It should be understood that the device as described and claimed herein is not limited to use with laptop computers. Its intended use is wide ranging, for example hand-held notebooks, personal organisers and calculators, and can be applied to any
25 computing means having a data input means and a visual display means.

CLAIMS

1. A device for illuminating at least a part of a computer comprising a data input means and visual display means, which device comprises illuminating means, guide means for guiding light emitted by said illuminating means toward said data input means, and releasable support means to enable the device to be supported in position on a part of a computer, the device being such that when supported by a computer the data input means can be illuminated without obscuring a user's view of the visual display means, and said guide means shields the visual display means from light emitted by the illuminating means.
2. A device as claimed in claim 1, wherein said guide means shields a user's eyes from light emitted by said illuminating means.
3. A device as claimed in claim 1 or 2, further comprising a body, one end provided with said illuminating means, the other end provided with said releasable support means, and the body moveable relative to said releasable support means and/or the illuminating means moveable relative to the body to adjust the position of the illuminating means with respect to the data input means.
4. A device as claimed in claim 1 or 2, wherein said releasable support means comprises a body provided with means for engaging the computer.
5. A device as claimed in claim 4, wherein said means for engaging comprises a hook adapted to engage the upper edge of the screen of a notebook computer in an open position.
6. A device as claimed in claim 4 or 5, wherein the position of the body with respect to the computer is adjustable to vary the position of the illuminating means with respect to the data input means.
7. A device as claimed in claim 6, wherein the body comprises a first member and a second member, the first member being attachable to a computer, the second member being supported by and movable with respect to the first member to facilitate said adjustment.

8. A device as claimed in claim 6, wherein the body comprises two or more members that are arranged telescopically with one another to facilitate said adjustment.
- 5 9. A device as claimed in any of claims 4 to 8, wherein the illuminating means is movable with respect to the body to provide a further degree of adjustment.
- 10 10. A device as claimed in any preceding claim, wherein the device comprises means for accommodating a power source for powering the illuminating means.
11. A device as claimed in any preceding claim, wherein said illuminating means is an LED.
- 15 12. A device as claimed in claim 11, wherein said illuminating means is a plurality of LEDs.
13. A computer adapted for supporting in position a device or part of a device as claimed in any preceding claim.
- 20 14. Computing means comprising a data input means associated with a visual display means, and integral with the computing means a device or part of a device as claimed in any preceding claim.
- 25 15. A device for illuminating at least a part of a computer, substantially as hereinbefore described with reference to and as shown in Figures 1 and 2 of the accompanying drawings.
- 30 16. A device for illuminating at least a part of a computer, substantially as hereinbefore described with reference to and as shown in Figures 3 and 4 of the accompanying drawings.
- 35 17. A device for illuminating at least a part of a computer, substantially as hereinbefore described with reference to and as shown in Figure 5 of the accompanying drawings.



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Application No: GB 0112248.0
 Claims searched: 1-17

Examiner: Gary Williams
 Date of search: 2 July 2001

Patents Act 1977 Amended Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
 UK Cl (Ed.S): B6F: FCNK
 Int Cl (Ed.7): F21V: 33/00; G06F: 1/16
 Other: Online:EPODOC,PAJ,WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2313904 A (CATALINA) See Figs.1-4, page 4 line 16 - page 8 line 4	1,- 4,9,10, 13,14
X	EP 0887586 A2 (BEGHELLI) See Figs.1-7, col.3 line 20 - col.5 line 28	1-4,6,10, 13,14
X	WO 01/02937 A1 (IBM) See Figs.3-8, page 7 line 4 - page 10 line 4	1- 4,10,11, 13,14
X	JP 070025415 U (SHINOMURA) 12.05.95 See Figs.1-4	1- 7,10,13, 14
A	US 6161944 (MICRON) See Figs.1&2, col.1 line 53 - col.2 line 41	1
A	US 5815225 (GATEWAY 2000) See Fig.1, col.2 lines 33-42	1
A	US 5036436 (RATTIGAN) See Figs.5-7, col.4 line 49 - col.5 line 36	1
A	US 4760277 (UNISON) See Figs.2&3, col.3 line 3 - col.4 line 12	1

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.



INVESTOR IN PEOPLE

Application No: GB 0112248.0
Claims searched: 1-17

Examiner: Gary Williams
Date of search: 2 July 2001

Category	Identity of document and relevant passage	Relevant to claims
X	US 4626965 (GUPTA) See Figs.2&3, col.2 line 42 - col.3 line 25	1-4,10,13,14

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.